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IMPORTANT INSECT OUTBREAKS IN OREGON AND WASHINGTON IN 1960

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SUMMARY

Epidemic insect outbreaks this year totalled 1,272,320 acres, the lowest recorded during the ten years for which records are complete.

1951 - 2,629,240	1956 - 1,410,660
1952 - 7,286,200	1957 - 2,129,440
1953 - 8,269,120	1958 - 2,032,720
1954 - 7,704,120	1959 - 1,448,360
1955 - 2,248,820	1960 - 1,272,320

Native insects presented no particularly acute problems. The spruce budworm problem continued to subside. A variety of defoliators occurred in outbreak numbers, but none required suppressive action. Damage by the balsam woolly aphid decreased, except in subalpine fir in the Oregon Cascades where renewed killing was evident. Damage by bark beetles was variable by species, but generally down.

The European pine shoot moth caused greatest concern. It was discovered on ornamental pines in Spokane, Wash., Portland, Ore., and in several additional places around Puget Sound, Wash. Efforts to keep this insect from becoming established in native ponderosa pine were accelerated.

Timely salvage of fire-killed trees prevented development of serious outbreaks of bark beetles within or adjacent to the large 1959 burns.

Chemical control was limited to three small projects. Two were against the mountain pine beetle in lodgepole pine in Crater Lake National Park, the other against the same insect in immature ponderosa pine on the Fremont National Forest.

The program of importing insect predators to control the balsam woolly aphid was continued for the fourth successive year, but on a reduced scale.

Table 1.--Summary of 1960 forest insect epidemic infestations in Oregon and Washington

Insects [1/]	Oregon		Washington		Regional Total	
	Infestation centers	Area	Infestation centers	Area	Infestation centers	Area
	Number	Acres	Number	Acres	Number	Acres
DEFOLIATORS:						
Spruce budworm	42	264,560	3	20,960	45	285,520
Fir bud moth	0	0	15	75,680	15	75,680
Ponderosa pine needle miner	8	52,560	0	0	8	52,560
Larch sawfly	0	0	4	5,440	4	5,440
Larch bud moth	0	0	2	2,080	2	2,080
Oak looper	1	2,080	0	0	1	2,080
Larch casebearer	0	0	1	1,920	1	1,920
Lodgepole needle miner	0	0	1	1,120	1	1,120
Black-headed budworm	1	440	0	0	1	440
Pine budworm	0	0	1	320	1	320
All defoliators	52	319,640	27	107,520	79	427,160
SUCKING INSECTS:						
Balsam woolly aphid	43	66,440	4	760	47	67,200
Pine needle scale	1	320	0	0	1	320
All sucking insects	44	66,760	4	760	48	67,520
BARK BEETLES:						
Mountain pine beetle (W)	91	31,040	338	209,400	429	240,440
Mountain pine beetle (L)	68	40,080	25	6,440	93	46,520
Mountain pine beetle (P)	55	14,520	26	4,740	81	19,260
Mountain pine beetle (S)	4	480	0	0	4	480
Douglas-fir beetle	508	114,160	243	104,440	751	218,600
Western pine beetle	289	142,520	28	18,300	317	160,820
Oregon pine ips	249	38,160	28	3,360	277	41,520
Fir engraver	90	27,240	50	14,680	140	41,920
Engelmann spruce beetle	5	1,840	8	3,120	13	4,960
Silver-fir beetle	0	0	7	3,120	7	3,120
All bark beetles	1,359	410,040	753	367,600	2,112	777,640
All insects	1,455	796,440	784	475,880	2,239	1,272,320

1/ Mountain pine beetle infestations are separated by tree species: L, lodgepole pine; P, ponderosa pine; S, sugar pine; W, western white pine.

DEFOLIATORS

SPRUCE BUDWORM (Choristoneura fumiferana Clem.)

Hosts this year: Douglas-fir, grand fir, subalpine fir, lodgepole pine, Engelmann spruce.

Current conditions: Infestation in the Blue Mountains Region of Oregon declined sharply in extent and intensity. On the Fremont National Forest in southern Oregon and on the Yakima Indian Reservation and adjoining private lands of the Glenwood District in southern Washington the budworm infestation approximately doubled in extent, but the intensity remained generally low. Trend was essentially as predicted from the 1959 egg mass survey. Recorded epidemic infestations during 1959 and 1960 were as follows:

Administrative Unit	1959		1960	
	Acres	Percent	Acres	Percent
Wallowa-Whitman N. F., Ore.	115,480	55	48,800	17
Fremont N. F., Ore.	82,400	39	215,760	76
Glenwood District, Wash.	5,160	3	14,240	5
Yakima Indian Reservation, Wash.	4,800	2	6,720	2
Malheur N. F., Ore.	1,440	1	0	0
Regional total	209,280	100	285,520	100

Trend: The 1960 egg mass survey indicated that the downward trend in the Blue Mountains Region will continue, that infestation on the Fremont will decline over most of the area, and that on the Glenwood-Yakima area the trend will remain static to slightly upward.

Control: As defoliation has not yet reached a serious stage and indications are strong that the infestation will decline naturally, no spraying is warranted in 1961.

FIR BUD MOTH

Hosts this year: Pacific silver fir, subalpine fir, grand fir.

Current conditions: Light defoliation by an undetermined budmoth, tentatively designated Zeiraphera sp., occurred on extensive areas along the Cascade Mountains in Washington. This is the first such outbreak of which we have record. As the buds were not injured, the defoliation to date is not considered serious.

Trend: Undetermined.

Control: None needed at this time.

PONDEROSA PINE NEEDLE MINER

Host this year: Ponderosa pine.

Current conditions: The outbreak of this as yet unidentified needle miner that developed on the Warner District of the Fremont National Forest, Ore., during 1958 increased markedly in extent and severity. While no tree killing is in prospect, continued infestation may weaken the trees to a point where they will be susceptible to bark beetle attack.

Trend: Undetermined. 1961 generation yet to be sampled.

Control: None developed. Life history will have to be worked out, and the effects of attack determined before control measures can be applied. So far no control is needed.

LARCH SAWFLY

Host this year: Western larch.

Current conditions: Stands in four small centers in northeastern Washington were lightly defoliated by an undetermined sawfly. The largest center was on Mt. Spokane.

Trend: Unknown.

Control: None needed at present.

LARCH BUDMOTH (Zeiraphera griseana Hubn.)

Host this year: Western Larch.

Current conditions: Infestation continued to decline. Only two small centers remain, one on the Okanogan, the other on the Wenatchee National Forest, both in Washington.

Trend: Downward.

Control: None developed; none needed.

OAK LOOPER (Lambdina fiscellaria somniaria Hulst.)

Host this year: Oregon white oak.

Current conditions: Trees west of Monmouth, Ore., were almost completely defoliated. Subsequently the attacked trees refoliated in considerable part. Experience with past outbreaks of this insect has been that they last only a short time and cause no lasting damage.

Trend: Undetermined.

Control: None needed.

LARCH CASEBEARER (Coleophora laricella Hbn.)

Host this year: Western larch.

Current conditions: This insect caused light defoliation of stands on Mica Peak in northeast Washington.

Trend: Unknown.

Control: None needed at this time.

PINE NEEDLE FASCICLE MINER (Zelleria sp.)

Host this year: Lodgepole pine.

Current conditions: One small center of light infestation of this insect associated with Recurvaria sp. appeared in scattered stands south of Olympia, Washington. Only the current year's growth was affected.

Trend: Undetermined.

Control: Not needed because affected stands are of very low value. Past outbreaks have subsided without evident damage.

BLACK-HEADED BUDWORM (Acleris variana Fern.)

Hosts this year: Mountain hemlock, western hemlock.

Current conditions: A small center appeared on the Mt. Hood National Forest, Ore. Damage was light.

Trend: Undetermined.

Control: None needed now. Outbreaks of this insect usually subside quickly without causing much damage.

PINE BUDWORM (probably Archips retiniana Wlsm.)

Host this year: Ponderosa pine.

Current conditions: Saplings immediately east of Leavenworth, Wash., were lightly attacked. This insect seldom kills a tree, but repeated destruction of the buds stunts it, causing it to become bushy.

Trend: Undetermined.

Control: None needed.

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana Schiff.)

Hosts this year: 15 species or varieties of pine in ornamental plantings. Mugho and Scotch pines are most prevalently attacked.

Current conditions: This European insect, which poses a serious threat to the ponderosa pine region was discovered near Seattle, Wash., in 1959. In 1960, extensive surveys of forest and ornamental nurseries, forest plantations, and ornamental plantings were made. So far infestations have been detected in Seattle and 5 other places around Puget Sound, Wash., in Spokane, Wash., and in Portland, Ore.. All were in nurseries or on ornamentals.

Trend: Evidently being spread rapidly through movement of ornamental pines.

Control: Steps are being taken to set up quarantines to prevent further movement of infested stock. Plans are underway to eradicate the moth from Spokane and Portland, and the feasibility of a general extermination program is being investigated.

SUCKING INSECTS

BALSAM WOOLLY APHID (Chermes piceae Ratz.)

Hosts this year: Pacific silver fir, subalpine fir, grand fir.

Current conditions: Damage by the balsam woolly aphid in Pacific silver fir stands continued to decline. Losses, especially in Washington reached the lowest level recorded since the infestation flared up in 1954. Stands in many areas have staged remarkable recovery. In subalpine fir, however, chermes populations were high and tree mortality increased, particularly on the south half of the Willamette National Forest. Discovery of an aggressive infestation on this host species on the Little River Ranger District of the Umpqua National Forest extended the southern boundary of known infestation in the region.

Trend: Upward in subalpine fir; static in Pacific silver and grand fir.

Control: Direct control is impractical under forest conditions. During the past four years efforts have been made to effect biological control by colonizing foreign insect predators of the aphid. A total of 15 species have been released. To date, 4 species appear established; their ability to reduce populations significantly will not be known for several years.

PINE NEEDLE SCALE (Phenacaspis pinifoliae Fitch.)

Host this year: Ponderosa pine.

Current conditions: During the past several years this scale has caused considerable loss in stands adjacent to orchards. The principal infestation centers in 1960 were in the Hood River Valley in Oregon, and in the lower Wenatchee Valley, and lower Klickitat River drainage in Washington. The build up of these infestations is attributed to the reduction in predators and parasites caused by spray drift from the orchards.

Trend: Indeterminate. Presumably conditions in 1961 will depend upon orchard spraying schedules.

Control: This insect has not yet become sufficiently important to warrant control measures.

BARK BEETLES

MOUNTAIN PINE BEETLE (Dendroctonus monticolae Hopk.)

Hosts this year: Western white pine, lodgepole pine, ponderosa pine, sugar pine.

Current conditions: In western white pine, infestation in Washington decreased on the Mt. Baker National Forest, remained static on the Olympic Peninsula, and increased sharply on the Snoqualmie and Gifford Pinchot National Forests; infestation decreased in the Oregon Cascades. The largest and most aggressive centers of epidemic were on the Gifford Pinchot.

In lodgepole pine, infestation increased moderately in Oregon, and declined somewhat in Washington. The largest and most aggressive centers of epidemic were on the Fremont National Forest, Ore.. The infestation in Crater Lake National Park, Ore., continued to be troublesome.

In ponderosa pine, infestations in stagnated pole-sized stands continued to increase. The majority of the centers were on the Fremont and Wallowa-Whitman National Forests, Ore.

In sugar pine, epidemic infestation was confined to small areas on the Rogue River National Forest, Ore..

Trend: Generally upward.

Control: Successful control of blister rust in white pine opens the way for reconsidering the need for control of the mountain pine beetle in this tree. Maintenance control was carried out on an expanded scale in lodgepole pine in Crater Lake National Park where increased losses necessitated recleaning previously treated areas to keep on top of an epidemic. A pilot control project was carried out on the Fremont National Forest in stagnated ponderosa pine pole stands. This was a stop-gap measure until the stands could be thinned to relieve stand pressure which is the underlying cause attracting the beetle.

DOUGLAS-FIR BEETLE (Dendroctonus pseudotsugae Hopk.)

Host this year: Douglas-fir.

Current conditions: The widespread epidemic that caused heavy losses on and near the Siskiyou, Rogue River, Umpqua and Siuslaw National Forests in southern Oregon during the past three years has subsided except for a small center near the Oregon Caves National Monument. In Washington, infestations on the Colville Indian Reservation and Okanogan National Forest continued upward. The large center near Lost Lake on the Okanogan was especially aggressive. Scattered beetle activity developed in fringe stands along the north side of the Umatilla National Forest in Oregon and Washington.

High velocity winds in November 1958 produced extensive areas of blowdown in southwestern Washington. Much of this favorable host material was attacked by the Douglas-fir beetle. The trees not removed by logging prior to beetle flight in the spring of 1960 produced broods which attacked standing green trees. The amount of killing is not known with certainty because fading was not complete at the time of the survey; however, the amount certainly was less than had been expected.

Trend: Downward in western Oregon. Some increase in eastern Oregon and Washington.

Control: Extensive salvage operations in southern Washington removed much of the infested down timber that might otherwise have caused a beetle outbreak. Continued logging of infested trees in outbreak centers is sound preventive practice.

WESTERN PINE BEETLE (Dendroctonus brevicomis Lec.)

Host this year: Ponderosa pine.

Current conditions: Epidemic conditions lessened on most areas in Washington. The decline was especially pronounced on the Gifford Pinchot and the Yakima Indian Reservation where heavy losses occurred in 1959. In Oregon, infestation continued upward on most areas. The increase was most noticeable on the Fremont, Malheur, and Ochoco National Forests.

The western pine beetle did not become seriously epidemic around the large burns of 1959. Prompt salvage of scorched trees of merchantable size, that were unlikely to survive, reduced the potential threat. As a result epidemics did not develop within the burns or adjacent green timber.

Trend: Decreasing in most ponderosa pine stands in Washington. Increasing to some extent in Oregon.

Control: An aggressive sanitation-salvage program with particular attention to active centers of infestation is sufficient to meet present needs.

OREGON PINE IPS (Ips oregoni Eichh.)

Host this year: Ponderosa pine.

Current conditions: The number of outbreaks increased considerably, but the total infested acreage declined substantially. The Malheur and Wallowa-Whitman National Forests in Oregon suffered the bulk of the loss. This ips attacked a high percentage of the badly scorched immature trees within the 1959 burns, but the infestation did not spread to the adjacent green stand.

Trend: Undetermined.

Control: Outbreaks develop and subside so quickly that it is far better to prevent a build up of infestation by proper management practices than to attempt direct control.

FIR ENGRAVER (Scolytus ventralis Lec.)

Hosts this year: Grand fir, subalpine fir.

Current conditions: Tree killing by this insect in scattered places in Oregon and Washington increased moderately. However, the damage was relatively unimportant as most of the loss was in defective overmature grand fir and in subalpine fir stands of low value.

Trend: Undetermined.

Control: No practical measures have been developed.

ENGELMANN SPRUCE BEETLE (Dendroctonus engelmanni Hopk.)

Host this year: Engelmann spruce.

Current conditions: The number of centers increased considerably, but the total infested acreage declined somewhat. Most of the infestations were in stands scattered along stream bottoms. The largest and most aggressive centers were on the Wenatchee National Forest, Wash.

Trend: Slightly upward.

Control: No direct control is needed because most infestations are in small isolated stands, many of which are in inaccessible areas where there is little danger of the infestation spreading.

SILVER FIR BEETLE (Pseudohylesinus spp.)

Host this year: Pacific silver fir.

Current conditions: The infestation which had been building up slowly for several years declined abruptly to a low level.

Trend: Downward.

Control: No direct control is needed.